

General Index

A

Abastor erythrogrammus, 203
Acer spp., 153
 Adrenal hypertrophy, deer, 84, 85, 94
Aerobacter aerogenes, 39
 African pompano, 211
 Age and growth, fish, 103
 Aging method, black duck, 128
 fish, scale samples, 103-9
 deer, tooth wear, 80
 Air-water temperature relation-
 ship, 8
Aiz sponsa, 153
Alectis ciliaris, 115
Alectis crinitis, 115, 211
 Alewife herring, 46-7, 100-1
Alosa aestivalis, 96, 100-2
Alosa pseudoharengus, 96, 100-2
Alosa sapidissima, 96, 97-100, 200,
 201
Alutera schoepfi, 212
Amaroucium constellatum, 197, 199
Amaroucium pellucidum, 199
Amaroucium stellatum, 199
Ambystoma maculatum, 119-20
 American eel, 46, 60
 American shad, 46, 96-101, 200, 201
Amphidinium, 196
Amyda ferox spinifera, 72
Amyda spinifera spinifera, 72
Anas discors, 152
Anas platyrhynchos, 153
Anas rubripes, 127, 152
Anas strepera, 152
Anchoa mitchilli, 118
 Anchovy, bay, 118
 Anchovy, northern, 106
 Angel shark, Atlantic, 210
 Angling pressure, 22, 28, 41, 46,
 74-5
Anguilla rostrata, 60, 70
Arbacia punctulata, 196
Ardea herodias, 152
Artemia salina, 169, 196
 Arteriosclerosis, deer, 87
 Arve, J., Preliminary report on
 attracting fish by oyster-shell
 plantings in Chincoteague
 Bay, Maryland, 58-65
 Ascidian, abundance and ecology,
 197-9
 range, 197, 199
 habitat, 197
Aspidonectes spinifer, 72
Asterias forbesi, 73-4
Astroscoptes guttatus, 211
 Atlantic angel shark, 210
 Atlantic croaker, 70, 74, 118, 207
 Atlantic menhaden, 60, 77, 97, 118
 Atlantic moonfish, 211
 Atlantic Ocean, 155-67
 Atlantic salmon, 106
 Atlantic thread herring, 210

B

Baccharis halmifolia, 153
 Bacteriological tests, soft-shelled
 clam, 36-40
 clostridia, 36-40
 E. coli test, 39
 false positives, 40
 indicator organisms, 39, 40
 M.P.N. (most probable number)
 techniques
 seasonal changes in bacterial
 counts, 40
 sporeformers, and canned prod-
 ucts, 40
 stormy fermenters, 36-40
 Banding, black duck, 128, 129, 137,
 138
 Barasingha deer, 94
 Barley, 141
 Barnacle, 116
 Barnacle-turtle association, 116
 Bass, black sea, 58-65
 Bass, channel, 207-9
 Bass, largemouth, 41, 46
 Bass, smallmouth, 46, 72, 105-6
 Bass, striped, 46, 70, 74-5, 106,
 111-3, 211, 213
 Bay anchovy, 118
 Bay marsh, 142
 Beaven, G. F., Temperature and
 salinity of surface water at
 Solomons, Maryland, 2-11
 Bigeye scad, 211
 Blackberry, 141
 Black crappies, 46
 Black duck, 127-54
 breeding behavior, 131-8
 cloacal aging method, 128
 clutches, 129, 133, 145, 146
 courtship, 132, 133
 cover, 130, 140
 egg laying, 129
 hatching data, 144
 incubation, 136, 144, 146, 147,
 148
 marking, 128, 129, 137, 138
 nest construction, 141, 142
 nest destruction, 150, 151
 nests, 128, 133, 137, 141, 142, 143,
 148, 149, 150
 pairing, 131, 132, 133, 134, 135
 predation, 150, 151
 production, 151, 152
 re nesting, 137-8
 territorial behavior, 133-5
 Black locust, 130
 Black racer, 148, 152
 Black sea bass, 58-64
 Black snake, 148
 Blue crab, 71, 110, 175, 196-7
 megalops, 110
 rearing, 196, 197
 zoecae, 196-7
 Blue crab rearing, 196, 197
 antibiotic dyes, use of in, 196

Aureomycin, use of in, 196
 Chloromycetin, use of in, 196
 food tests, 196
 malachite green, use of in, 196
 Penicillin G., use of in, 196
 survival rate, 196, 197
 Terramycin HCL, use of in, 196
 Victoria blue R, use of in, 196
 Bluefish, 60
 Bluegill, 46, 104
 Blue runner, 211
 Blue-winged teal, 133
 Boat patrols, duck, 128
 Bob-white quail, 146
 Body weight, length, girth rela-
 tionship, toadfish, 122-3
Branchiostoma caribaeum, 210
 Breeding behavior, black duck,
 131-8
 Breton Bay, 201
Brevoortia patronus, 70
Brevoortia tyrannus, 60, 70, 77, 97,
 118
 Brown shark, 204
 Brown trout, 106
 Bullhead, yellow, 46
 Bullnose ray, 210
 Bull shark, 68-71, 211
 Burrfish, striped, 212
 Butterfish, 60
 Butterflyfish, spotfin, 60

C

Callinectes sapidus, 71, 110, 175,
 196-7
Campsis radicans, 153
 Cape Charles, 165
 Cape Cod, 197
 Cape Henry, 159, 163, 165
 Carangid fishes, 115
Caranx crysos, 115, 211
Caranx hippos, 115-6
Caranx latus, 115
Carcharhinus leucas, 68-71, 206, 211
Carcharhinus milberti, 204, 205
Carcharhinus springeri, 206
Caretta caretta, 116
 Cargo, D. G., A megalops of the
 blue crab, *Callinectes sapidus*,
 in the Patuxent River, Mary-
 land, 110
 Cargo, D. G., Predation of eggs
 of the spotted salamander,
 Ambystoma maculatum, by the
 leech, *Macrobdella decora*, 119-
 20
 Cargo, D. G. (with F. J.
 Schwartz), Recent records of
 the xanthid crab, *Panopeus*
 herbsti, from Maryland and
 Virginia waters, 201-3
 Carlson, F. (with J. D. Rust),
 Some observations on rearing
 blue crab larvae, 196-7
 Carp, 46

General Index

A

Abastor erythrogrammus, 203
Acer spp., 153
 Adrenal hypertrophy, deer, 84, 85, 94
Aerobacter aerogenes, 39
 African pompano, 211
 Age and growth, fish, 103
 Aging method, black duck, 128
 fish, scale samples, 103-9
 deer, tooth wear, 80
 Air-water temperature relation-
 ship, 8
Aiz sponsa, 153
Alectis ciliaris, 115
Alectis crinitis, 115, 211
 Alewife herring, 46-7, 100-1
Alosa aestivalis, 96, 100-2
Alosa pseudoharengus, 96, 100-2
Alosa sapidissima, 96, 97-100, 200,
 201
Alutera schoepfi, 212
Amaroucium constellatum, 197, 199
Amaroucium pellucidum, 199
Amaroucium stellatum, 199
Ambystoma maculatum, 119-20
 American eel, 46, 60
 American shad, 46, 96-101, 200, 201
Amphidinium, 196
Amyda ferox spinifera, 72
Amyda spinifera spinifera, 72
Anas discors, 152
Anas platyrhynchos, 153
Anas rubripes, 127, 152
Anas strepera, 152
Anchoa mitchilli, 118
 Anchovy, bay, 118
 Anchovy, northern, 106
 Angel shark, Atlantic, 210
 Angling pressure, 22, 28, 41, 46,
 74-5
Anguilla rostrata, 60, 70
Arbacia punctulata, 196
Ardea herodias, 152
Artemia salina, 169, 196
 Arteriosclerosis, deer, 87
 Arve, J., Preliminary report on
 attracting fish by oyster-shell
 plantings in Chincoteague
 Bay, Maryland, 58-65
 Ascidian, abundance and ecology,
 197-9
 range, 197, 199
 habitat, 197
Aspidonectes spinifer, 72
Asterias forbesi, 73-4
Astroscoptes guttatus, 211
 Atlantic angel shark, 210
 Atlantic croaker, 70, 74, 118, 207
 Atlantic menhaden, 60, 77, 97, 118
 Atlantic moonfish, 211
 Atlantic Ocean, 155-67
 Atlantic salmon, 106
 Atlantic thread herring, 210

B

Baccharis halmifolia, 153
 Bacteriological tests, soft-shelled
 clam, 36-40
 clostridia, 36-40
 E. coli test, 39
 false positives, 40
 indicator organisms, 39, 40
 M.P.N. (most probable number)
 techniques
 seasonal changes in bacterial
 counts, 40
 sporeformers, and canned prod-
 ucts, 40
 stormy fermenters, 36-40
 Banding, black duck, 128, 129, 137,
 138
 Barasingha deer, 94
 Barley, 141
 Barnacle, 116
 Barnacle-turtle association, 116
 Bass, black sea, 58-65
 Bass, channel, 207-9
 Bass, largemouth, 41, 46
 Bass, smallmouth, 46, 72, 105-6
 Bass, striped, 46, 70, 74-5, 106,
 111-3, 211, 213
 Bay anchovy, 118
 Bay marsh, 142
 Beaven, G. F., Temperature and
 salinity of surface water at
 Solomons, Maryland, 2-11
 Bigeye scad, 211
 Blackberry, 141
 Black crappies, 46
 Black duck, 127-54
 breeding behavior, 131-8
 cloacal aging method, 128
 clutches, 129, 133, 145, 146
 courtship, 132, 133
 cover, 130, 140
 egg laying, 129
 hatching data, 144
 incubation, 136, 144, 146, 147,
 148
 marking, 128, 129, 137, 138
 nest construction, 141, 142
 nest destruction, 150, 151
 nests, 128, 133, 137, 141, 142, 143,
 148, 149, 150
 pairing, 131, 132, 133, 134, 135
 predation, 150, 151
 production, 151, 152
 renewing, 137-8
 territorial behavior, 133-5
 Black locust, 130
 Black racer, 148, 152
 Black sea bass, 58-64
 Black snake, 148
 Blue crab, 71, 110, 175, 196-7
 megalops, 110
 rearing, 196, 197
 zoecae, 196-7
 Blue crab rearing, 196, 197
 antibiotic dyes, use of in, 196

Aureomycin, use of in, 196
 Chloromycetin, use of in, 196
 food tests, 196
 malachite green, use of in, 196
 Penicillin G., use of in, 196
 survival rate, 196, 197
 Terramycin HCL, use of in, 196
 Victoria blue R, use of in, 196
 Bluefish, 60
 Bluegill, 46, 104
 Blue runner, 211
 Blue-winged teal, 133
 Boat patrols, duck, 128
 Bob-white quail, 146
 Body weight, length, girth rela-
 tionship, toadfish, 122-3
Branchiostoma caribaeum, 210
 Breeding behavior, black duck,
 131-8
 Breton Bay, 201
Brevoortia patronus, 70
Brevoortia tyrannus, 60, 70, 77, 97,
 118
 Brown shark, 204
 Brown trout, 106
 Bullhead, yellow, 46
 Bullnose ray, 210
 Bull shark, 68-71, 211
 Burrfish, striped, 212
 Butterfish, 60
 Butterflyfish, spotfin, 60

C

Callinectes sapidus, 71, 110, 175,
 196-7
Campsis radicans, 153
 Cape Charles, 165
 Cape Cod, 197
 Cape Henry, 159, 163, 165
 Carangid fishes, 115
Caranx crysos, 115, 211
Caranx hippos, 115-6
Caranx latus, 115
Carcharhinus leucas, 68-71, 206, 211
Carcharhinus milberti, 204, 205
Carcharhinus springeri, 206
Caretta caretta, 116
 Cargo, D. G., A megalops of the
 blue crab, *Callinectes sapidus*,
 in the Patuxent River, Mary-
 land, 110
 Cargo, D. G., Predation of eggs
 of the spotted salamander,
 Ambystoma maculatum, by the
 leech, *Macrobdella decora*, 119-
 20
 Cargo, D. G. (with F. J.
 Schwartz), Recent records of
 the xanthid crab, *Panopeus*
 herbsti, from Maryland and
 Virginia waters, 201-3
 Carlson, F. (with J. D. Rust),
 Some observations on rearing
 blue crab larvae, 196-7
 Carp, 46

- Carteria*, 196
 Castagna, M. (with F. J. Schwartz and G. Griffith), Comments on the abundance and ecology of the ascidian *Amaroucium constellatum* in Sinepuxent and Chincoteague Bays, 197-9
 Catch per unit effort, 46, 75
 Catch probability, gillnets, 97-101
 Catfish, channel, 46
 Catfish, white, 46
 Cedar, 140, 152
Centropistes striatus, 58, 60, 64
Cervus nippon, 79-102
Chaetodipterus faber, 123-4
Chaetodon ocellatus, 60
 Chain pickerel, 46
 Channel bass, 207
 Channel catfish, 46
Chelonia mydas mydas, 116
 Chesapeake Bay, 5-7, 21-35, 68-71, 127, 161-3, 178-86, 188, 200, 204, 206
 CBL (Chesapeake Biological Laboratory) pier, 7
 Drum Point harbor, 7
 hurricanes, 178-86
 mid-bay, 6
 Patuxent River, 6-7
 salinity and temperature atlas, 6
 shad fishery, 200
 tides, 178
 Chester River, 21-8
Chilomycterus schoepfi, 212
 Chincoteague Bay, 58-9, 197, 201, 203
 description, 197
 freshwater inflow data, 51-3
 oyster-reef plantings to attract fish, 58-65
 physical dimensions, 48
 salinity observations, 48, 213
 salt balance, 48-57
 Southern drill in, 213
Chlamydomonas, 196
Chlorella, 196
Chloroscombrus chrysaurus, 115
 Christian, J. J. (with V. Flyger and D. E. Davis), Factors in the mass mortality of a herd of sika deer, *Cervus nippon*, 79-95
 Cirrhosis, deer, 84, 88, 89, 93
 Clam, hard-shelled, 168, 214
 Clam, soft-shelled, 12-20, 36-40, 66-8, 210
 bacteriological tests, 36-40
 dredging, 12-20, 37, 66
 survey, Somerset County, 66-8
 Clam, surf, 73
 Clarke-Bumpus sampler, 157
 Claspingleaf pondweed, 114, 131, 153
 Cloacal aging method, 128
Clostridium perfringens, 36-40
 Clutches, black duck, 128, 133, 145, 146
 Coliform bacteria, 36-40
Colinus virginianus, 152
Coluber constrictor, 152
 Common crow, 148-52
 Competition among deer, 89, 94
 Competition among fish, 31-2
 Connie, 1955 hurricane, 179
 Conowingo Reservoir, 44, 46
 Continental shelf, survey, 155-6
 area description, 157
 ecological importance, 155-6
 relationship to estuaries, 156
 sampling techniques, 157-8
 Controllable pitch propeller, 13-20
 Cooper, J. E., Another rainbow snake, *Abaster erythrogrammus*, from Maryland, 203-4
 Cordgrass, 130, 140, 149
Corvus brachyrhynchos, 152
Corvus ossifragus, 152
 Courtship, black duck, 132, 133
 Cownose ray, 211
 Crab, blue, 110, 175, 196-7
 megalops, 110
 rearing, 196, 197
 zoeae, 110, 196-7
 Crab, mud, 201-3
 Crab, stone, 168-77
 Crabs, 5, 110, 168-77, 196-7, 201-3
 Crappies, black, 46
 Crappies, white, 46
Crassostrea virginica, 168
 Creel census, Northeast River, 41-7
 angling pressure estimate, 41
 catch per unit effort, 46
 design, methods, 41-4
 errors in collecting data, 44-5
 fishermen count, 42
 interview, 42
 Northeast River, 41-2
 reply card, 42
 sport fish harvest, 41
 Creville jack, 115-6
 Croaker, Atlantic, 70, 74, 118, 207
 Cronin, L. E., Introduction (to Journal), 1
 Crow, fish, 148, 150
 Crow, common, 148-52
 Current patterns, Ocean, water, 165-7
 anticyclonic eddy, 165
 Cape Charles, 165
 Cape Henry, 165
 circulation, 167
 coastal drift, 165
 drift bottles, recovery, 165
 isohaline pattern, 165
 spawning grounds on, 165
 surface, 167
 velocity, 167
Cynoscion regalis, 70, 118, 207, 209
Cyprinus carpio, 74
- D**
- Damage, hurricanes, 178
Dasyatis americana, 60, 76
Dasyatis centroura, 76-7
Dasyatis sabina, 76
Dasyatis say, 76-7
 Davis, D. E. (with J. J. Christian, and V. Flyger), Factors in the mass mortality of a herd of sika deer, *Cervus nippon*, 79-95
 Davis, D. E. (with V. D. Stotts), The black duck in the Chesapeake Bay of Maryland: breeding behavior and biology, 127-54
 Deep Creek Lake, 44, 46
 Deer, barasingha, 94
 Deer, sika, 79-95
 Deer, white-tailed, 80, 81
 Development, larval toadfish, 189-195
 Diamondback terrapin, 151
 Diseases, sika deer, 84-94
 adrenal hypertrophy, 84, 85, 94
 arteriosclerosis, 87
 cirrhosis, 84, 88, 89, 93
 glomerulonephritis, 85, 87-9, 91, 93-4
 hepatitis, 84, 88-9, 91, 94
 ischemia, 85
 juxamedullary congestion, 87
 necrosis, 89
 nephrosis, 89
 pneumonia, 84, 93
Distichlis spicata, 153
 Dogfish, smooth, 124
 Dovel, W., Larval development of the oyster toadfish, *Opsanus tau*, 187-95
 Dredge, hydraulic clam, 12-20, 37, 66
 Dredge, hydraulic, clam, controllable pitch propeller on, 12-20
 Dredging, 12-20, 37, 66
 hardshell clam, 214
 hydraulic, 12-20, 37, 66
 soft-shelled clam, 12-20, 37, 66
 Drift bottles, 165
 Drift, coastal, 165
 Drill, oyster, 197, 199, 213
 Drill, southern, 213
 Drum Point Harbor, 7
 wind and tidal action, 7
 Drum, red, 207-10
 Duck, black, 127-54
 Duck cover, 130
 Duck production, 151-2
 Duck, puddle, 136-7
 Duck, shoveler, 133
Dunaliella, 196
 Dyes, antibiotic, 196
- E**
- E. coli* test, 39
Echeneis naucratus, 212
 Eel, American, 46, 60
 Eelgrass, 114, 131, 153
 Egg laying data, black duck, 129
Elaphe obsoleta, 153
Elodea canadensis, 131, 153
 Elser, H. J., Creel census results on the Northeast River, Maryland, 1958, 41-7
Elysia chlorotica, 114
Engraulis mordax, 106
Escherichia coli, 36-40
Esox lucius, 121
 Estuary, 2-7, 21, 31, 41, 161-3
 Chesapeake Bay, 2-7
 continental shelf effects, 156
 hydrography, 2-11

Estuary—Continued

- salinity, 8-10, 31, 161-3
- Susquehanna flats, 30, 42
- temperature, 7-8
- Eulamia milberti*, 204
- Eupleura*, 214
- Euthynnus alletteratus*, 211
- Exchange rate, 48-57
- F**
- Feeding and food, crabs, 169, 196
- Feeding and food, deer, 81
- Feeding and food, fish, 64-5, 70, 77, 113, 116
- Filefish, orange, 212
- Fin ray counts, toadfish, 194
- Fin rotation, toadfish, 191
- Fish, 21-35, 41-7, 58-65, 74-5, 103-9, 111-3, 115-6, 117-8, 120-2, 122-3, 123-4, 187-95, 200-1, 207-9
 - age and growth, 103
 - angling pressure, 22, 28, 41, 46, 74-5
 - catch per unit effort, 46, 75
 - Chester River, yellow perch supply, 21
 - creel census, 41-7
 - ctenoid scales, 103
 - currents, effects of, 156, 207, 209
 - dispersal, factors affecting, 31, 34, 155-6
 - dominant year class, 75
 - effort, 22, 28, 41, 46, 74, 75
 - feeding and food, 64-5, 70, 77, 113, 116
 - fin ray counts, toadfish, 194
 - gillnetting, 96-102
 - haul seining, 74-5
 - homing, 34, 200
 - interviews, 42
 - involuntary movements, 207, 209
 - larval development, toadfish, 187-95
 - management in estuary, 21
 - mark and recapture, 22-3, 26, 200-1
 - marking, 22, 23, 26, 200
 - migration, 21-35, 200-1
 - movements, 23-4, 64, 200-1, 207-9
 - myotome count, toadfish, 194
 - Petersen disk tag, 22, 200
 - pugheadedness, 111, 112, 113
 - "put and take", 22
 - recaptures, 22, 23, 26, 200, 201
 - reefs, 58-65
 - resident, 21-35
 - salinity effects, 31
 - scale sampling, 103-9
 - size characteristics, 25-6, 68, 208
 - sound production, 115-6
 - sport harvest, 41
 - stocked, 21-35
 - tagging, 22, 60, 200
 - tags, 22, 60, 200
 - tidal effects, 207, 209
- Fish crow, 148, 150
- Fisheries,
 - clam, 5, 12, 13

- crab, 5
- finfish, 5
- oyster, 5
- shad, 200
- Fishermen canvas, 74, 200
- Fishery management, 21, 34, 41, 58, 65, 96
- Fishing effort, 22, 28, 41, 46, 75-5
- Florida rock-shell, 213
- Flounder, summer, 60, 61, 63, 118
- Flyer, V. (with J. J. Christian and D. E. Davis), Factors in the mass mortality of a herd of sika deer, *Cervus nippon*, 79-95
- Fox, red, 148
- Freezing point, water, 2
- Frogs, 119
- G**
- Gar, 117
- Gasterosteus aculeatus*, 121
- Gillnetting, fish, 96-102
 - catch probability, 97-101
 - construction of, 96-7
 - effects on fishing effort, 96
 - herring, 100-1
 - nylon vs. linen fibers, 96-102
 - shad, 97-100
- Glomerulonephritis, deer, 85, 87-9, 91, 93-4
- Glut herring, 96-7, 100-1
- Golden shiners, 46
- Grackle, 128
- Greenbelt Lake, 44
- Green briar, 130
- Green sunfish, 46
- Green turtle, 116
- Griffith, G. (with F. J. Schwartz and M. Castagna), Comments on the abundance and ecology of the ascidian *Amaroucium constellatum* in Sinepuxent and Chincoteague Bays, 197-9
- Groundsel bush, 130
- Growth rate, red drum, 208-9
- Gulf-III High Speed Plankton Sampler, 157
- Gum, 130
 - sour, 130
 - sweet, 130
- Gymnodinium*, 196

H

- Harbor porpoise, 121
- Harbor seal, 121
- Hardshell clam, 168, 214
- Hatching data, black duck, 144
- Hatching size variation, toadfish, 189
- Haul seining, 74-5
 - catch effort, 74-5
 - seine days, 74-5
 - striped bass, 74-5
- Heron, 128
- Herring, alewife, 96-7, 100-1
- Herring, Atlantic thread, 210
- Herring, glut, 96-7, 100-1
- High Speed Plankton Sampler
 - Gulf-III, 157
- Hightide bush, 120
- Hogchoker, 118

- Homing tendency, American shad, 200
- Homing tendency, yellow perch, 34
- Honeysuckle, 130, 140, 141
- Horned pondweed, 131
- Hughesville Community Pond, 44, 46
- Hunn, J. (with P. F. Robinson and C. G. Wilber), Organ-body weight relationships in the toadfish, *Opsanus tau*, 120-3
- Hurricanes, Chesapeake Bay, 178-186
 - Annapolis, 179
 - Baltimore, 179
 - Connie, 1955, 179
 - damage, 178
 - eastern type surge, 179
 - inverted barometer effect, 179
 - predicted and actual tide differences, 178
 - surges, general and modified, 178
 - tide dependence on path, 178
 - western type surge, 179
- Hydraulic clam dredge, 12-20, 37, 66
 - controllable pitch propeller, 13-20
 - dredging efficiency, 12
 - dredging rates, 15-18, 20
 - dredging requirements, 12-20, 66
- Hyla crucifer*, 119
- Hyla femoralis*, 204

I

- Ictalurus*, 74
- Incubation, black duck, 136, 144, 146, 147, 148
- Indicator organisms, 39-40
- Inscribing eggs, black duck, 129
- Inshore lizardfish, 211
- Interviews, fishing, 42
- Intraspecific competition, 31-2, 89, 94
- Isochrysis*, 196
- Isohalines, 8-10, 161, 165
- Isotherms, 159
- Iva frutescens*, 153

J

- Jack, crevalle, 115
- James Island, 79
- Joseph, E. B. (with W. H. Massmann and J. J. Norcross), Investigations of inner continental shelf waters off lower Chesapeake Bay. Part I—General introduction and hydrography, 155-167
- Juncus roemerianus*, 153
- Juxamedullary congestion, deer, 87

K

- Kent Island study area, black duck, 129, 130, 131
- Kingfish, southern, 209

L

- Laboratory, spawning, stone crab, 168, 169
 Lake Waterford, 44, 46
Lagocephalus laevigatus, 212
Lagodon rhomboides, 60
 Lancelet, 210
 Largemouth bass, 41, 46
 Lear, D. W., Stormy fermenters and coliform bacteria in the soft-shelled clam *Mya arenaria* and its habitat, 36-40
 Leech, 119-20
Leiostomus xanthurus, 60, 74, 77, 207
Lepisosteus, 117
Limulus polyphemus, 153
 Linear regression, 120, 122, 194
Liquidambar styraciflua, 153
 Little tuna, 211
 Lizardfish, inshore, 211
 Loblolly pine, 131, 139, 142
 Loch Raven, 44, 46
 Locust, black, 130
Lonicera japonica, 153
 Lookdown, 211

M

- McIntosh, K. A. (with J. H. Manning), Evaluation of a method of reducing the powering requirements of soft-shell clam dredging, 12-20
Macrobrachia decora, 119-20
 Magothy River, 21-28, 44, 46, 201
Malaclemys terrapin, 152
 Male promiscuity, black duck, 136, 137
 Mallard, 131, 133, 139, 146, 153
 Malnutrition, deer, 79, 89, 91, 94-5
 Manning, J. H. (with K. A. McIntosh), Evaluation of a method of reducing the powering requirements of soft-shelled clam dredging, 12-20
 Mansueti, R., Comparison of the movements of stocked and resident yellow perch, *Perca flavescens*, in tributaries of Chesapeake Bay, Maryland, 21-35
 Mansueti, R., Comments on the roughtail stingray, *Dasyatis centroura*, in Maryland waters, 76-7
 Mansueti, R., Selection of body site for scale samples in the white perch, *Roccus americanus*, 103-9
 Mansueti, R., An unusually large pug-headed striped bass, *Roccus saxatilis*, from Chesapeake Bay, Maryland, 111-3
 Mansueti, R., Occurrence of the rough scad, *Trachurus lathami*, in Chesapeake Bay, Maryland, 117-8
 Mansueti, R., Restriction of very young red drum, *Sciaenops ocellata*, to shallow estuarine

- waters of Chesapeake Bay during late autumn, 207-10
 Mansueti, R. (with M. Taylor), Sounds produced by very young crevalle jack, *Caranx hippos*, from the Maryland seaside, 115-6
 Mansueti, R. (with D. H. Wallace), Notes on the soft-shell turtle (*Trionyx*) in Maryland waters, 71-2
 Maple, 130
 Mark and recapture, fish, 22, 23, 26, 200
 Marking, black duck, 128, 129, 137, 138
 Massmann, W. H. (with E. B. Joseph and J. J. Norcross), Investigations of inner continental shelf waters off lower Chesapeake Bay. Part I—General introduction and hydrography, 555-67
 Mattaponi River, 200
 Megalops, blue crab, 110
 distribution, 110
 Megalops, stone crab, 168-77
 Menhaden, Atlantic, 60, 77, 97, 118
Menippe mercenaria, 168-77
Menticirrhus americanus, 209
Mercenaria mercenaria, 169
Micropogon undulatus, 70, 74, 118, 207
Micropterus d. dolomieu, 72, 105-6
Micropterus s. salmoides, 41, 111
 Migration, 21-35, 82, 128, 200, 206
 black duck, 128
 deer, 82
 fish, 21-35, 200
 shark, 206
 Mobula, 70
Monochrysis, 196
 Moonfish, Atlantic, 211
 Mud crab, 201-3
 Muney, R. J., A study of the comparative efficiency between nylon and linen gill-nets, 96-102
 Murphy, G. J., Availability of striped bass during summers of 1958 and 1959 as reflected in commercial haul seine catch, 74-5
 Muskrat, 148
Mustelus canis, 124-5
Mya arenaria, 36-40, 66-8, 210
Myliobatis freminvillei, 210
 Myrtices, toadfish, 194
Myrica spp., 153

N

- Naiad, southern, 131
Najas guadalupensis, 153
Nannochloris, 169
 Necrosis, deer, 89
 Needlerush, 130, 140, 153
 Nephrosis, deer, 89
 Nest construction, black duck, 141, 142
 Nest desertion, black duck, 133, 149

- Nest destruction, black duck, 150, 151
 Nest marking, black duck, 128
 Nest searching, black duck, 129
 Nichols, P. R., Homing tendency of American shad, *Alosa sapidissima*, in the York River, Virginia, 200-1
Nitzschia, 196
 Nocturnal activity, deer, 82
 Norcross, J. J. (with E. B. Joseph and W. H. Massmann), Investigations of inner continental shelf waters off lower Chesapeake Bay. Part I—General introduction and hydrography, 155-167
 Northeast River, 41, 42, 44, 45, 46
 Northern anchovy, 106
 Northern pike, 121
 Northern puffer, 60, 61, 63
 Northern stargazer, 211
 Nudibranch, 114-5
 behavior, 114-5
 movement, 114-5
 Nylon vs. linen gillnet fibers, 96-102
Nyssa sylvatica, 153

O

- Oak, 130
 Ocean, water current patterns, 165-7
 Opercular tag, fish, 60
Opisthonema oglinum, 210
Opsanus tau, 60, 120-3, 187-95
 Orange filefish, 212
 Organ-body weight relationship, toadfish, 120
 Orientation, sun-compass, in fish, 33
Orthopristis chrysopterus, 211
 Oxygen, effects on fish, 113
 Oyster, 5, 58-65, 168
 Oyster drill, 197, 199, 213
 Oyster-shell planting to attract fish, 58-65
 Oyster toadfish, 187-195
 Chesapeake Bay species, 188
 eggs, 188
 fin ray count, 194
 habitat, 188
 larval development, 187-195
 late embryonic stage, 188-9
 myotomes, 194
 Patuxent River, 188
 range, 188
 spawning season, 188
 vertebrae, 194
 vitelline artery, 191
 young, 193

P

- Pacific sardine, 106, 107
 Pamunkey River, 200
Panicum virgatum, 153
Panopeus herbsti, 201-3
 Chesapeake Bay, 201-3
 habitat, 203
 Maryland occurrence, 201
 measurements, 203
 Patuxent River, 201

- Panopeus herbsti*—Continued
 Potomac River, 201
 St. Mary's River, 201, 203
 salinity range, 203
Paralichthys dentatus, 60, 70, 118
 Pathology, deer, 84-94
 Patuxent River, 5-7, 37, 188, 200, 201
Perca flavescens, 21-35
 Perch, white, 46, 60, 71, 63, 103-9
 Perch, yellow, 21-35, 46
 Petersen disk, fish tag, 22, 200
 Pfitzenmeyer, H. T., Supplemental survey of soft-shelled clam bottoms in tidewater Somerset County, Maryland, 66-8
 Pfitzenmeyer, H. T., Notes on the nudibranch, *Elysia chlorotica*, from Chesapeake Bay, Maryland, 114-5
Phasianus colchicus, 153
 Pheasant, ringnecked, 146
Phoca vitulina, 121
Phocaena phocaena, 121
 Pickerel, chain, 46
 Pigfish, 211
 Pike, northern, 121
 Pilot black snake, 148, 153
 Pine, loblolly, 131, 139, 142, 153
 Pine snake, northern, 204
 Pinfish, 60, 61, 63
Pinna, 189
Pinus taeda, 153
Pinus virginiana, 153
 Pipping stage, black duck, 137, 147, 148
Pituophis melanoleucus melanoleucus, 304
 Plankton Sampler, Gulf-III, High Speed, 157
Platylepas hexastylus, 116
Platylepas hexastylus ichthyophila, 116
Platymonas, 196
 Poison ivy, 130, 140
Pomatomus saltatrix, 60
 Pompano, African, 211
 Pondweed, clasping-leaf, 114, 131, 153
 Pondweed, horned, 131
 Population density, deer, 79-81, 88, 91, 93-4
 Population density, fish, 32
 Pore, A., Chesapeake Bay hurricane surges, 178-86
Poronotus triacanthus, 60
 Porter, H. J. Zoal stages of the stone crab, *Menippe mercenaria* Say, 168-77
 Post nuptial molt, black duck, 131, 132
Potamogeton pectinatus, 153
Potamogeton perfoliatus, 114, 153
 Potomac River, 46, 201
 Predation
 ducks, 150, 151
 frog eggs, 119
 leech, 119
 salamander eggs, 119
 Pritchard, D. W., Salt balance and exchange rate for Chincoteague Bay, 48-57
Proccentrum, 196
Procyon lotor, 153
 Puddle duck, 136-7
 Puffer, northern, 60, 61, 63
 Puffer, smooth, 212
 Pugheadedness
 fish, 111-3
 striped bass, 111-3
 Put and take stocking, 22
 Pycnosis, deer, 84, 93
- Q**
- Quail, bobwhite, 146
Quercus spp., 153
Quiscalus quiscula, 152
- R**
- Raccoon, 137, 148, 150
Rachycentron canadus, 77
 Rainbow snake, 203-4
 ecology, 203
 measurements, 203-4
 occurrence in Maryland, 204
 Stump Neck Peninsula, occurrence in, 204
 Ray, bullnose, 210
 Ray, cownose, 212
 Red clover, 141
 Red drum, Chesapeake Bay, 207-10
 depth distribution 207-9
 distribution in estuary, 208
 growth, 209
 seasonal restriction, 207
 spawning area, 207
 spawning season, 209
 Red fox, 148
Rhinoptera bonasus, 211
Rhus radicans, 153
 Ringnecked pheasant, 146
Robinia pseudo-acacia, 153
 Robinson, P. F. (with C. G. Wilber and J. Hunn), Organ-body weight relationships in the toadfish, *Opsanus tau*, 120-2
 Robinson, P. F. (with C. G. Wilber), The correlation of length, weight and girth in the toadfish, *opsanus tau*, 122-3
Roccus americanus, 60, 70, 103-9
Roccus saxatilis, 70, 74-5, 166, 111, 211, 212
 Rock-shell, Florida, 213
 Rosefish, 104, 106
 Rough scad, 117-8
 Roughtail stingray, 76-7
Rubus, sp., 153
 Runner, blue, 211
Ruppia maritima, 153
 Rust, J. D. (with F. Carlson), Some observations on rearing blue crab larvae, 196-7
- S**
- Sago pondweed, 131
 Salamander eggs, 119
 predation of, 119
 Salamander, spotted, 119
 Salinity, 2-11, 31, 48, 110, 111, 114, 117, 123, 161-5, 213
 averages, 2
 bottom range, 161, 163
 Chesapeake Bay, 161-3
 density readings, 8
 fish, effects on, 31, 207
 fluctuations, causes, 9, 11
 fresh water, inflow effects, 9
 interpolated values, 9
 isohalines, 8-10, 161-3, 165
 sharks, tolerance of, 70
 stratification, 9, 161, 163
 surface range, 161, 163
 thermograph recordings, 3, 4, 5, 6, 7
 titration, 8
 vertical sampling, 9
 weekly sampling, 2
 wet-dry year variations, 3
Salmo salar, 106
Salmo trutta, 106
 Salmon, Atlantic, 106
 Salt balance, 48-57
 Salt grass, 130
 Salt marsh, 130
 Salt meadow, 130, 136, 140, 149
 Chincoteague Bay, 48-57
 Samplers, 157
 Clarke-Bumpus plankton, 157
 Gulf-III High speed plankton, 157
 Sandbar shark, 204, 206
 Chesapeake Bay occurrence, 204, 206
 measurements, 206
 spawning grounds, 206
 wintering grounds, 206
 young, 205
 Sardine, 106
 Sardine, Pacific, 106, 107
Sardinops caerulea, 106, 107
Sardinops melanosticta, 106
 Scad, big-eye, 211
 Scad, rough, 117-8
 Scale-body length relationship, 103, 105
 Scale variation, fish, 103-9
 age and growth, 103
 measurements, 104-8
 optimal body site selection, 103-9
 scale variation, 103, 105-6
 Schwartz, F. J., Additional comments on adult bull sharks *Carcharhinus leucas* (Müller and Henle), from Chesapeake Bay, Maryland, 68-71
 Schwartz, F. J., The barnacle, *Platylepas hexastylus*, encrusting a green turtle *Chelonia mydas mydas*, from Chincoteague Bay, Maryland, 116-7
 Schwartz, F. J., An unusual winter survival of a young spadefish, *Chaetodipterus faber*, 123-4
 Schwartz, F. J., Comments on the smooth dogfish, *Mustelus canis*, from Chesapeake Bay, Maryland, 124-5
 Schwartz, F. J., Measurements and the occurrence of young sandbar shark, *Carcharhinus milberti*, in Chesapeake Bay, Maryland, 204-6

- Schwartz, F. J., Recent additions to the upper Chesapeake Bay fish fauna, 210
- Schwartz, F. J., (with M. Castagna, and G. Griffith), Comments on the abundance and ecology of the Ascidian *Amaroucium constellatum* in Sinepuxent and Chincoteague Bays, 197-9
- Schwartz, F. J. (with D. G. Cargo), Recent records of the xanthid crab, *Panopeus herbsti*, from Maryland and Virginia waters, 201-3
- Sciaenops ocellata*, 207-10
- Scrub pine, 130
- Sea lettuce, 131
- Seal, harbor, 121
- Sebastes narinus*, 104
- Solar crumenophthalmus*, 211
- Selene vomer*, 115, 211
- Seriola zonata*, 115
- Seyvern River, 21-8
- Sex identification, black duck, 128
- Shad, American, 46, 96-101, 200-1
angling for, 46
Chesapeake Bay fishing, 200
homing tendencies, 200
netting for, 97-9
Pamunkey River, 200
Petersen disk, 200
recaptures, 200, 201
spawning grounds, 200, 201
York River population, 201
- Sharks, 68-71, 124, 212
Atlantic angel, 210
attacks on fishermen, 69
bull shark, 68-71, 212
Chesapeake Bay, 68-71, 204, 206
gonad condition, 69, 70
measurements, 68, 69, 124
newborn, 206
salinity tolerance, 70
sandbar, 204, 205
smooth dogfish, 124
stomach contents, 70
- Shark sucker, 212
- Shiners, golden, 46
- Shoveler ducks, 133
- Sieling, F. W., Mass mortality of the starfish, *Asterias forbesi*, on the Atlantic coast of Maryland, 73-4
- Sieling, F. W., A notable range extension of the Southern drill, *Thais haemastoma floridana*, into Chincoteague Bay, 212-4
- Sika deer, 79-95
adrenal glands, 83-4
age determination, 80
diet, 81
diseases, 84-94
food, 81
growth indicator, 83, 93
intraspecific competition, 89, 94
James Island stock, 79-95
kidneys, 84-8
kills, 80
liver, 88-9
malnutrition, 79, 89, 91, 94-5
migration, 82
mortality factors, 79-82, 88-9, 91, 93-4
nocturnal activity, 82
organs, 83-9
pathology, 84-94
population density, 79-81, 88, 91, 93-4
tissue fixing, staining, 80
- Sinepuxent River, 48, 197
- Siren lacertina*, 204
- Smallmouth bass, 46, 72, 105-6
- Smilax* spp., 153
- Smithville Pond, 46
- Smooth dogfish, 124
- Smooth puffer, 212
- Snake, black racer, 148, 152
- Snake, pilot black, 148, 153
- Snake, pine, 204
- Snake, rainbow, 203-4
- Soft-shelled clam, 12-20, 36-40, 66-8, 210
bacteriological examination, 36-40
brood stock, 66
coliform bacteria in, 36-40
dredging, 12-20, 37, 66
E. coli test, 39
fishery, 12, 13
indicator organisms, 39, 40
population level of, 37, 38
predation on, 66
productive potential, 66
sampling, 37
seasonal changes in bacterial count in, 40
Somerset survey, 66-8
sporeformers and canned products, 40
stormy fermenters in, 36-40
subtidal stocks, 12
unfavorable conditions, effects of, 66
- Soft-shell turtle, 71-2
- Sound production, fish, 115-6
earangid fishes, 115
crevalle jack, 115-6
stridulatory, 116
villiform teeth in, 116
- Sourgum, 130
- Southern drill, 212-4
- Southern kingfish, 209
- Southern naiad, 131
- Southern stingray, 60, 76
- Spadefish, 123-4
- Spartina alterniflora*, 153
- Spartina patens*, 153
- Spatula clypeata*, 153
- Sphaeroides maculatus*, 60
- Spisula solidissima*, 73
- Sport fish harvest, 41
- Spot, 46, 60, 61, 63, 74-5, 77, 207
- Spotfin butterflyfish, 60
- Spotted salamander, 119
- Spring peeper, 119
- Squatina dumerili*, 210
- Starfish, 73-4
depth indicators, 73
mortality, Ocean City, 73-4
sizes, 73
wind effects on, 73
- Stargazer, northern, 212
- Steakfish, 125
- Stickleback, threespine, 121
- Stingray, roughtail, 76-7
description of developing ova, 76
measurements, 76, 77
stomach contents, 77
- Stingray, southern, 60, 76
- Stocking, fish, 21-35
- Stomach contents, fish, 64-5, 70, 77, 113, 116
- Stone crab, rearing, 168, 177
food preference, 169
habitat, 168
larval stage variation, 175
measurements, 168
megalops, 169
mortalities, 169
pre-zoea, 169, 172
zoeal stages, 169-77
- Stormy fermenters, 36-40
- Stotts, V. D. (with D. E. Davis), The black duck in the Chesapeake Bay of Maryland: breeding behavior and biology, 127-54
- Stratification, salinity, 9, 161, 163
- Striped bass, 46, 70, 74-5, 106, 111-113, 211, 212
- Striped burrfish, 212
- Sucker, shark, 212
- Suckers, white, 46
- Summer flounder, 60, 61, 63, 118
- Sun-compass orientation in fishes, 33
- Sunfish, green, 46
- Surf clam, 73
- Surges, hurricane, 178-186
- Survival, winter, spadefish, 123-4
- Susquehanna flats, 30, 42
- Susquehanna River, 9, 24
- Sweetgum, 13
- Synodus foetens*, 211
- T**
- Tagging, fish, 22, 60, 200-1
reward, 22
- Tarpon, 123
- Tautog, 60
- Tautoga onitis*, 60
- Taylor, M. (with R. J. Mansueti), Sounds produced by very young crevalle jack, *Caranx hippos*, from the Maryland seaside, 115-6
- Teal, blue-winged, 133
- Temperature, water, 2-11, 110, 114, 117, 123, 158-61
Atlantic Ocean, 158-61
bottom, 159
calculations and corrections, 7
Cape Henry, 159
cycles, significance, 9, 10
daily, 2-11
daily range, 7
effect on southern drill, 214
effect on spawning time, 9
effect on spadefish, 123
homogeneity, vertical, 159
isotherms, 159
ocean, 158-61

- Temperature—*Continued*
 seasonal differences, 8
 surface, 2-11, 158
 surface freezing point, 2
 thermograph, 3, 4, 6
 variance, 2
 vernal warming, 159
 water-air relationships, 8
 weekly sampling, surface and bottom, 8
 wind effects on, 8
 Terrapin, diamondback, 151
 Territorial behavior, black duck, 133, 134, 135
Thais haemastoma floridana, 213
Thalassochelys caretta, 116
 Thermograph recordings, 2, 7
 Thermometer, mercury, 7
 Thread herring, Atlantic, 210
 Threespine stickleback, 121
 Tissue fixing, staining, deer, 80
 Titrations, salinity, 8
 Toadfish, 60, 61, 63, 120-3, 187-95
 body weight, length, girth relationship, 122-3
 linear regressions, 120, 122
 organ-body weight, 120
 Toadfish, oyster, 187-95
 eggs, 188
 growth rate, 188-95
 larvae, 187-95
 larval activity, 191
 linear regression, 194
 meristic numbers, 193
 yolk-sac absorption, 190-3
Trachinotus carolinus, 115
Trachinotus glaucus, 115
Trachinotus palomela, 115
Trachurus lathami, 117
Trachurus trachurus, 117
 Traps, wire, 59, 60, 129, 137, 212
 drill, 212
 ducks, 129, 137
 fish, 59, 60
Trionychidae, 71
Trionyx, 71-2
Trionyx ferox ferox, 71
Trionyx ferox spinifera, 71-2
 Trout, brown, 106
 Trumpet vine, 130
 Tuna, little, 211
 Turtle, green, 116
 barnacle association, 116
 distribution, 116
 Turtle, soft-shell, 71, 72
 in brackish water, 71
 stocking in Potomac, 72
 transplanted specimen, 72
 U
Ulva lactuca, 153
Urosalpinx cinerea, 199, 213
 V
Vomer setapinnis, 115, 211
 W
 Wallace, D. H. (with R. Mansueti), Notes on the soft-shell turtle (*Trionyx*) in Maryland waters, 71-2
 Walleyes, 46
 Water-air temperature relationship, 8
 Water current patterns, ocean, 165-7
 Wax myrtle, 130
 Weakfish, 118, 207, 209
 White catfish, 46
 White crappies, 46
 White perch, 46, 60, 103-8
 White sucker, 46
 White-tailed deer, 80, 81
 Widgeongrass, 131
 Wilber, C. G. (with P. F. Robinson and J. Hunn), Organ-body weight relationships in the toadfish, *Opsanus tau*, 120-2
 Wilber, C. G. (with P. F. Robinson), The correlation of length, weight and girth in the toadfish, *Opsanus tau*, 122-3
 X
 Xanthid crab, 201-3
 habitat, 203
 Maryland occurrence, 201
 measurements, 203
 Patuxent River, 201
 Potomac River, 201
 salinity range, 203
 St. Mary's River, 201, 203
 Y
 Yellow bullhead, 46
 Yellow perch, 21-35, 46
 angling pressure, 22, 46
 Chester River supply, 21
 competition, 31-2
 homing tendency, 34
 management in estuary, 21
 migration, 21-35
 movements, 23-35
 orientation, 33
 planting adults, 22
 put and take stocking, 22
 recaptures, 26-31
 resident, 21-35
 stocked, 21-35
 York River, 200
 Z
Zannichellia palustris, 153
 Zoeae, blue crab, 110, 196-7
 Zoeae, stone crab, 168-77
Zostera marina, 114, 153

CHESAPEAKE SCIENCE

A REGIONAL JOURNAL OF RESEARCH AND PROGRESS ON NATURAL RESOURCES

Volume I, 1960

ROMEO J. MANSUETI

Managing Editor

Published By

State of Maryland
Department of Research and Education
Chesapeake Biological Laboratory
Solomons, Maryland
L. E. Cronin, Director

Table of Contents

NUMBER 1, APRIL, 1960

CRONIN, L. EUGENE. Introduction	1
BEAVEN, G. FRANCIS. Temperature and salinity of surface water at Solomons, Maryland	2
MANNING, J. H., AND KENNISON A. MCINTOSH. Evaluation of a method of reducing the powering requirements of soft-shelled clam dredging ...	12
MANSUETI, ROMEO. Comparison of the movements of stocked and resident yellow perch, <i>Perca flavescens</i> , in tributaries of Chesapeake Bay, Maryland	21
LEAR, DONALD W. Stormy fermenters and coliform bacteria in the soft-shelled clam <i>Mya arenaria</i> and its habitat	36
ELSER, HAROLD J. Creel census on the Northeast River, Maryland, 1958 ..	41
PRITCHARD, D. W. Salt balance and exchange rate for Chincoteague Bay ..	48
ARVE, JOHN. Preliminary report on attracting fish by oyster-shell plantings in Chincoteague Bay, Maryland	58

Notes and Comments

PFITZENMEYER, H. T. Supplemental survey of soft-shelled clam bottoms in tidewater Somerset County, Maryland	66
SCHWARTZ, FRANK J. Additional comments on adult bull sharks <i>Carcharhinus leucas</i> (Müller and Henle), from Chesapeake Bay, Maryland ..	68
MANSUETI, ROMEO, AND DAVID H. WALLACE. Notes on the soft-shell turtle (<i>Trionyx</i>) in Maryland waters	71
SIELING, FRED W. Mass mortality of the starfish, <i>Asterias forbesi</i> , on the Atlantic Coast of Maryland	73
MURPHY, GEORGE J. Availability of striped bass during summers of 1958 and 1959 as reflected in commercial haul seine catch	74
MANSUETI, ROMEO J. Comments on the roughtail stingray, <i>Dasyatis centroura</i> , in Maryland waters	76

NUMBER 2, JUNE, 1960

CHRISTIAN, JOHN J., VAGN FLYGER, AND DAVID E. DAVIS. Factors in the mass mortality of a herd of sika deer, <i>Cervus nippon</i>	79
MUNCY, ROBERT J. A study of the comparative efficiency between nylon and linen gillnets	96
MANSUETI, ROMEO J. Selection of body site for scale samples in the white perch, <i>Roccus americanus</i>	103

Notes and Comments

CARGO, DAVID G. A megalops of the blue crab, <i>Callinectes sapidus</i> , in the Patuxent River, Maryland	110
MANSUETI, ROMEO J. An unusually large pugheaded striped bass, <i>Roccus saxatilis</i> , from Chesapeake Bay, Maryland	111

PFITZENMEYER, HAYES T. Notes on the nudibranch, <i>Elysia chlorotica</i> , from Chesapeake Bay, Maryland	114
TAYLOR, MALCOLM AND ROMEO J. MANSUETI. Sounds produced by very young crevalle jack, <i>Caranx hippos</i> , from the Maryland seaside	115
SCHWARTZ, FRANK J. The barnacle, <i>Platylepas hexastylus</i> , encrusting a green turtle, <i>Chelonia mydas mydas</i> , from Chincoteague Bay, Maryland	116
MANSUETI, ROMEO J. Occurrence of the rough scad, <i>Trachurus lathami</i> , in Chesapeake Bay, Maryland	117
CARGO, DAVID G. Predation of eggs of the spotted salamander, <i>Ambystoma maculatum</i> , by the leech, <i>Macrobdella decora</i>	119
ROBINSON, PAUL F., CHARLES G. WILBER AND JOSEPH HUNN. Organ-body weight relationships in the toadfish, <i>Opsanus tau</i>	120
WILBER, CHARLES G. AND PAUL F. ROBINSON. The correlation of length, weight and girth in the toadfish, <i>Opsanus tau</i>	122
SCHWARTZ, FRANK J. An unusual winter survival of a young spadefish, <i>Chaetodipterus faber</i>	123
SCHWARTZ, FRANK J. Comments on the smooth dogfish, <i>Mustelus canis</i> , from Chesapeake Bay, Maryland	124

NUMBERS 3-4, DECEMBER, 1960

STOTTS, VERNON D. AND DAVID E. DAVIS. The black duck in the Chesapeake Bay of Maryland: breeding behavior and biology	127
JOSEPH, EDWIN B., WILLIAM H. MASSMANN, AND JOHN J. NORCROSS. Investigations of inner continental shelf waters off lower Chesapeake Bay. Part I—General introduction and hydrography	155
PORTER, HUGH J. Zoéal stages of the stone crab, <i>Menippe mercenaria</i> Say	168
PORE, ARTHUR. Chesapeake Bay hurricane surges	178
DOVEL, WILLIAM. Larval development of the oyster toadfish, <i>Opsanus tau</i>	187

Notes and Comments

RUST, JOHN D. AND FRANK CARLSON. Some observations on rearing blue crab larvae	196
SCHWARTZ, FRANK J., MICHAEL CASTAGNA, AND GEORGE GRIFFITH. Comments on the abundance and ecology of the ascidian <i>Amaroucium constellatum</i> in Sinepuxent and Chincoteague Bays	197
NICHOLS, PAUL R. Homing tendency of American shad, <i>Alosa sapidissima</i> , in the York River, Virginia	200
SCHWARTZ, FRANK J. AND DAVID G. CARGO. Recent records of the xanthid crab, <i>Panopeus herbsti</i> , from Maryland and Virginia waters	201
COOPER, JOHN E. Another rainbow snake, <i>Abaster erythrogrammus</i> , from Maryland	203
SCHWARTZ, FRANK J. Measurements and the occurrence of young sandbar shark, <i>Carcharhinus milberti</i> , in Chesapeake Bay, Maryland	204
MANSUETI, ROMEO J. Restriction of very young red drum, <i>Sciaenops ocellata</i> , to shallow estuarine waters of Chesapeake Bay during late autumn	207

SCHWARTZ, F. J. Recent additions to the upper Chesapeake Bay fish fauna	210
SEILING, F. W. A notable range extension of the southern drill, <i>Thais</i> <i>haemastoma floridana</i> , into Chincoteague Bay	212
Index	216

